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An
Inaugural Essay
on
Wounds of the Articulations.

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by
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of
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Commune quod est, ne tunc solum dicas.

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To one, not acquainted with the fact, it may appear somewhat strange, that in the records of surgery there is scarcely to be found a satisfactory treatise on wounds of the joints.

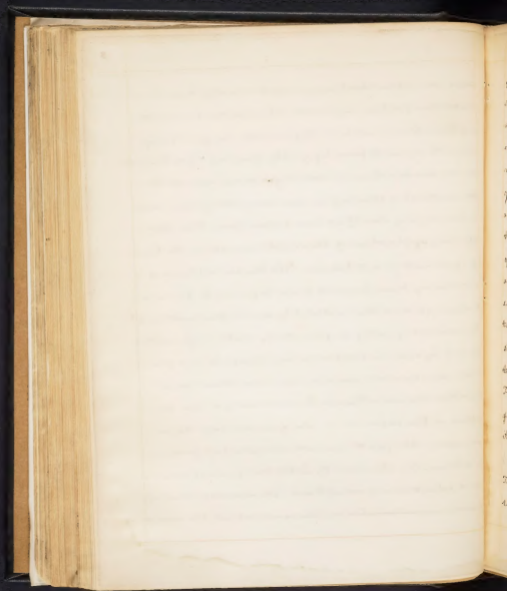
Few authors have touched upon the subject, and those few in a manner so cursory, as to leave our knowledge of these accidents, quite limited. — Whether their silence be owing to the extreme simplicity of their treatment, not differing in any degree from wounds in other parts; or to their occasional immediate and unexpected fatality, not admitting of practical investigation, I shall not take upon my self to determine. Perhaps a more palpable reason may be found in the melancholy fact, that there is no portion of the human dissection more grossly neglected by the student of anatomy, or less generally understood by the young practitioner of surgery, than the structure and vital habitudes of the articulations, —

a wound of a joint, may be defined a division or penetration of the capsular ligament. In addition to the opening in the capsule there is frequently a laceration of the lateral ligaments, cartilages, and bones. There are many varieties of these accidents, caused by puncturing, incising and contusing instruments, or indeed by any mechanical violence.

The symptoms attendant on the milder forms of these injuries are not peculiar; but such as accompany any simple wound, as pain increased heat of the part, redness, tumefaction and more or less extravasation or effusion. The more aggravated symptoms we will mention when treating of complicated wounds of the joints.

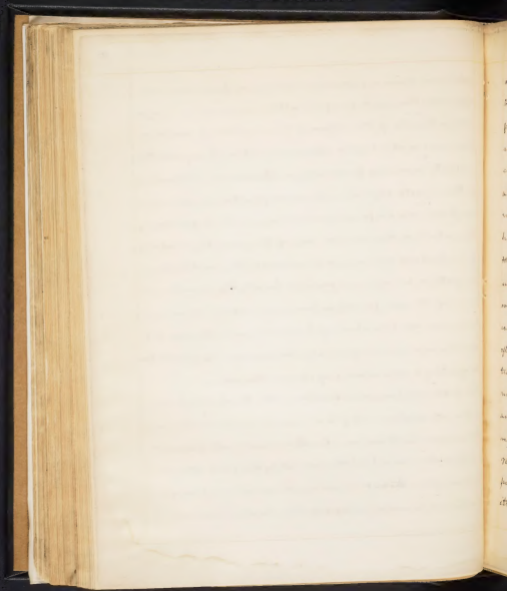
The surgeon is generally enabled to determine whether the cavity of the joint be injured or not by the direction of the wound, and by the discharge of synovia. It is possible for him however to be mistaken in this fluid as it very much resembles that discharged from the bursae mucosae and sheaths of tendons. Boyer relates several

cares when this discharge might readily have been mistaken for true synovitis. Should this circumstance not have been noticed at first, the surgeon may cause it again to flow by gently pressing upon the part. In our examinations of such injuries we cannot be too cautious or sparing in our use of the probe. Much serious injury doubtless has arisen from the too officious application of this instrument in the hands of ignorant practitioners. The tender adhesions which may have formed or are beginning to form are broken up, and the irritability and inflammation of the wound greatly augmented. As the information gained by such interference can lead to no formal conclusion, we should in doubtful cases treat the wound as though it were really a case of rupture of the capsule. — In general says Boyer wounds of the joints are not dangerous if properly and timely attended to; but to this general rule we must admit many exceptions. The records of surgery furnish innumerable instances in which the most



fatal and alarming consequences ensued from wounds apparently the most simple; so that in drawing a comparative estimate of the different terminations of recorded cases, we are at a loss to determine whether to consider the majority as ending favourably or otherwise. A knowledge of these facts, should make us very cautious in expressing our prognosis: in forming which we must be guided by the extent of the wound, size of the joint, the vicinity of important nerves and blood vessels, the constitution of our patient, his age and previous habits, the climate and season of the year, facility of procuring suitable accommodations, and the likelihood of his being well attended to. Scurvy and scrofula says Hansen are insuperable bars to effecting a cure under any circumstances. -

The first and grand indication in the treatment of wounds of the articulations, is to guard against inflammation and its consequences; to use our utmost endeavours to prevent suppuration, and heal the wound by the first intention. To accomplish these ends, we must remove all foreign substances, secure if necessary the bleeding vessels,



apposition to the divided edges of the wound in a certain manner
in that situation by adhesive strips. The elastic bandage
placed in a position most favorable for securing the integu-
ments one next to the other, says Langens to cover the wound with
compresses wet with some medicated liquid and over these
a bandage should be applied remarkably tight. By this
mode of treatment he has seen many cases entirely
healed in ten to fifteen days. In addition to
the treatment here proposed one would judiciously recom-
mend the application of heat, especially if passed in liquid
over the wound. This is one of the most effectual means we
can make use of for excluding the atmosphere which so
often forms, indirectly, an exciting cause of the inflammation.
Local and general bleeding cold evaporating cataplasms
emollient poultices, alcohol, rest, abstraction, if the patient is young
are not to be altogether too. The local blood must be
regulated by the nature and extent of the wound.
The feelings of the patient must be examined and if the
pain be materially alleviated by this or that application,
its employment will thereby soon be unnecessary. Admits.



have been recommended and when more benefit are undoubtedly
beneficial but judging from analogy we must say that
they should not be applied whilst there is marked
symptoms of acute inflammation. Lintones should never
be used if they can possibly be dispensed with. Liniment
ointments have been successfully used; when the swelling
and inflammation rapidly are accompanied with great tension
of the joint. Elementary the Lint has been highly recom-
ended by one of our best authorities.

From facts of all our endeavours to promote resolution pro-
cesses in the cavity of the joint we should imme-
diately evacuate it by sucking from it (suction) into the
abscess. This last operation is not mentioned by all
authorities; but certainly it is much better by free
incisions to decompose the fluid than to suffer it to remain
and remain and become a source of irritation.

Boyer thinks the exposure of the joint by incisions so
beneficial as the stagnation of the fluid within it.
There is a remark of professor Gerson particularly to
be remembered in connection it is that the surgeon



should, carefully watch the condition of his patient when the symptoms of inflammation come about subsiding.

The system will then feel the effects of the antiphlogistic treatment and will rapidly sink, if the surgeon like a vigilant sentinel does not keep always on the lookout and by a well timed interference prevent a succession of injurious consequences which of necessity must destroy his patient. At this period we should give sedatives, leeches, blisters, sweet-oil, poultices, wetting applications, clean ring practice, &c. &c. —

When we find that anasthesia will be the most probable consequence we should choose that position for the limb most likely to prove easiest to man & patient; if it be an elbow the arm must be flexed at right angles if the knee the leg should be extended.

after these general remarks on wounds of the articulations we will proceed to the collection of particular wounds and we shall commence them both in relation to the instrument that has formed them and the circumstances which accompany them



I shall presume that clinicians of the subject marked out by professor
 Boyer, and speak first of simple punctured wounds.

By a simple punctured wound we understand one formed
 by a narrow pointed instrument the external surface
 of which bears no relation to its depth. This description
 of wounds is, *ceteris paribus*, much more dangerous and
 difficult of management than simple incised wounds.
 This may be ascribed to their great depth, to the injury
 done to the fibres, to the difficulty of removing foreign
 substances and of making sufficient examination.

Experience teaches us that inflammation is more readily
 excited in such wounds. There is a peculiar propensity
 in favour of gangrene than wounds which is certainly
 very pernicious. From an erroneous habit that the
 difficulty of healing such injuries, arises from the narrow-
 ness of the external opening, some surgeons are in the
 habit of making free incisions for the purpose, as
 they say, of converting it into a simple incised
 wound. This practice says Samuel Cooper is in
 no wise to be imitated — Without farther noticing



the absurd notions of many authors on this subject? I am fully convinced that the best practice is to bring the parts in contact, to endeavour to heal the wound by the first intention, and to pay strict attention to the general treatment here to fore mentioned.

Simple incised wounds come next in order, they differ little in symptoms from those just mentioned and require much the same treatment. Any thing we could here say would amount to little more than a recapitulation of what has been said when treating of wounds in general, or would be anticipation of what I have yet to say when on the treatment of complicated wounds. They present only one indication, which is that of healing the wound by the first intention. The prognosis is very generally favourable when this has been attended to — Under the third and last division of this subject we will consider complicated wounds of the joints. Even gun shot wounds of these parts present nothing peculiar in their symptoms or



treatment I shall no farther consider them as a distinct species than by retaining their appropriate name. They may still be rationally enough considered as complicated or simple according to the nature of the accident.

We have a bone inserted that wounds the articulation does not always terminate fatally and that however simple the injury be in their commencement, yet if the patient constitution be not good or he does not keep the part perfect by at rest, serious consequences may arise and the unfortunate suffers immensely, fearfully or be saved only by amputation.

When we consider any danger, that almost all wounds of the joints that have been immediately closed and in which there is no particular circumstance to prevent adhesion, unite by the first intention and that in cases where wounds are not closed the most serious symptoms follow we cannot avoid attributing these consequences to the impression of air rather internal than by animal



membrane, and to the cartilages and fatty matter within the joint. We know by experience, continues the same author that the action of air on parts not naturally accustomed to its influence will especially serve membranes to excite inflammation. In the next sentence he says that air cannot be considered as the only cause of inflammation of joints that are wounded, for it often succeeds to wounds so narrow and oblique that the fluid cannot enter, in other cases inflammation occurs too suddenly to have been produced by its influence. He is persuaded that wounds of the cartilages and bones improve discharges, excite in regions, wounded condition of the patient, every all contribute to origin of inflammation, and perhaps it may arise from one of the above mentioned causes exclusively.

little experience is necessary to convince any one that the views taken by this author of this subject are incorrect. as regards his idea of air always proving



The cause of irritation and inflammation when applied to surfaces not accustomed to its influence, this is an opinion long since exploded, as may be shown by the experiments of Dr. Richter and others.

Besides do we not daily see joints amputated and the synovial membrane exposed for a considerable length of time in contact with this fluid and yet no bad consequences result. I cannot see the infelicity of his second remark to the case in question.

That air cannot be always considered as the cause of inflammation in wounded joints is now admitted. Inflammation of a very serious character may, and often does occur in joints that have never been wounded or mechanically injured in any way.

Hence we cannot concur in the belief that inflammation ever arises from wounds of the cartilages. These substances owing to their want of vascularity for ever resist the inflammatory process. Cartilages it is true may be absorbed, and the heads of the bones thus brought in contact may cause inflammation, but



This is an evil resulting from the presence, or at the presence, of cartilages.

If then it be not the action of the air on the exposed synovial membrane that produces these aggravated symptoms attendant on removal of the joints, to what cause it may be asked can we attribute them?

We may very rationally surmise that the more reason we suppose that the extravasated blood, of what the synovial is the most common cause of these productions.

Sharp being observed through the cavity of the joint and coming in contact with the ~~synovial~~ ^{cartilage}, and that time undergoing the putrefactive fermentation, and thus creates great irritation and inflammation of the delicate synovial membrane.

That air when admitted to come in contact with coagulated blood will render it putrid and consequently irritating and one well known to decay, so well as the nasal mucus pellets of ~~the~~ ^{the} that he made it a new name, to refer to the common extravasated blood unless it was



so situated that it could be entirely removed. If it is excluded from such blood it will survive without succor needs or water it is absorbed. Should the water, secreted however be absorbed and air admitted into the cavity, containing blood, it will soon putrify & become irritating producing inflammation and the joint is soon sloughing. This view is far as I am able to learn the original suggestion of L. Thomas Harris of the United States Navy, who had ample opportunity of testing its veracity during our late war when the penetration of blood into the external wound had not been observed or the exposed blood suffered to remain in the joint, he almost invariably found the symptoms both constitutional and local greatly aggravated.

Dr. Willms when treating of wounds of the joints makes the following observations: "Experience has shown that should much blood be extravasated into the cavity of a joint it will either lose its living principle and then irritate like any other extraneous substance, or by becoming vascular it



will destroy the smoothness of the synovial membrane
 to which it is united and thus produce ankylosis.
 Although it may appear presumption - me to
 differ from so high authority, yet I cannot concur
 with the Br. author. His idea of the blood vessel
 its vitality is correct, but that it ever becomes vascu-
 lar in the joints is an error to which few patho-
 logists of the present day will yield their assent.
 I am disposed to think indeed that had it not been
 for his great practicality for the opinions of Bro Hunter,
 his own experience would have taught him that
 is never was true. I cannot believe that the
 blood becomes vascular in the cavity of joints, or
 adheres to the synovial membrane. This mem-
 brane may from inflammation become
 coagulable lymph, and thus become thick, as
 and rough, but from the natural secretion which
 lubricates its surface, and the almost immediate
 putrefaction or fermentation which takes place
 when the air has not been excluded, I am led to



the conclusion that there would not be sufficient time for any coagulation to be formed between the blood and this membrane. If the external wound has been closed immediately and the ar. not admitted we have many cases on record of foreign bodies remaining for a length of time and yet no local or systemic mischief. Mr Hay relates one case in *Smith's* where blood and cemented it self in the capsular ligament yet it was absorbed with out the smallest inconvenience. Most writers, says Samuel Cooper, speak of collections of blood in the cavity of joints but he thinks it a very rare occurrence, common in the neighborhood of joints and such as are generally considered as within the capsular ligament are, he thinks, not out of it. Sir Ed Cooper when treating of **compound dislocations** of the ankle joint, observes, that the causes of the violence of the lacerations are the wound which is made into the joint and the great effort required for its repair but makes no mention of the blood as being an important



agent in their production. We indeed are able to find any author who has expressed such an opinion.

At this excretory digression let us return to the consideration of complicated wounds of the joints. On the fifth day and sometimes sooner symptoms of inflammation commence, with an aggravation of all the symptoms before mentioned. We have pain in the head and back of the neck, nausea and vomiting the skin is tense and shining, the lips of the mouth become pale bloated, and discharge a thin sanguifluid the tongue becomes parched and dry, of a dark brown, or pale yellow colour. Thirst, hurried respiration, fever, delirium, and sometimes tetanus; the synovia is increased in quantity and becomes thin. To these symptoms succeed suppuration pus is formed and accumulated in the cavity of the joint, the ligaments and cartilages become relaxed, pain becomes excruciating and the patient dies



If the constitution be able to weather out the first symptoms it then assumes a chronic form. Suppuration daily increases, symptoms of hectic come on, colliquative diarrhoea, pineness of countenance, and ultimate exhaustion, which destroys the patient unless saved by timely amputation... It sometimes happens that these symptoms gradually subside and a cure is brought about but with ankylosis. Not infrequently says Dr Thomson there is an erythematous swelling enveloping the whole limb and preventing amputation in cases where it seemed necessary for the preservation of the individual.

Another treatment by caustic application is at the joints the most agreeable measure to be adopted in the worst of the joint. The great indication is to subvert inflammation and prevent suppuration which should be fulfilled by drawing blood freely both locally and generally. Even when the extent of solid blood letting may be considerable, any



be derived from the process of a case is evident in the
words of Mr. Hume, in which it is stated that the
fruits of the tree have been used and fifty years of course
in some days and that the fruit is now so large that
there was so much in quantity and so much in quality
as not to have been surpassed even by the best of
Vassalona. We should give no less delicate objects,
and should avoid making any reference to the
link and after the signification of such explanation
have substituted a large letter placed over the number
so it shows all keeping the count perfectly clear.
Letters as above stated should not be used in
approximating the divided edges of the amount when
used, we cannot be too careful in working the
'capula' and confirming the stitches to the integument
alone. When first is formed we must specially examine
it by making fine incisions in the most depending
parts. I would think we should not be inclined to
examine the piece until it has been in current longer
before discharging it in to the chamber as usual.



But most Boyer are of a different opinion. They recommend emollients to be made and all foreign matter carefully washed out. The effused blood must, certainly, be removed. The next operation, says Boyer, when an abscess of a joint has resulted directly from inflammation produced by a wound of the capsule contains, we should open it as soon as fluctuation is perceived, and make the incision large enough to insert and the finger. At this period emollient poultices may be used with advantage, in order to cleanse the wound.

Inflammation having subsided we must give a generous diet, such as wine, feather and bark. As an external application at this period Boyer recommends a decoction of cinchona and brandy. Gun shot wounds cannot be healed by the first intention, but must necessarily suppurate. The first indication in the treatment of such injuries is, to search for the extraneous body and to endeavor to remove it, as it can not fail to produce serious evils;



for however harmful a ball may be whilst lodged in a muscular part, or amongst cellular membrane, in the cavity of a joint it cannot fail to excite the most violent symptoms. If the ball cannot be felt by the probe or if it be firmly imbedded in the head of the bone, so as not to be moved with out considerable force, we then let suffer it to remain, in hopes that suppuration may bring it away. In the meantime cleansing poultices are to be applied and inflammatory symptoms kept under. The practice of stuffing the wound with lint is to be condemned. The instrument is to be attached to elevating the limb and keeping it perfectly still.

Surgeons are not agreed as to the propriety of amputation in wounds of the joints; nor indeed can there be any definite rule laid down, we must in all cases be governed by the violence of the symptoms, heat of the member, constitution of our patient, and extent of the injury done.



There can be little doubt of the propriety of amputation when the wound is extensive and the principal blood-vessels are ruptured, and the sooner the better.

But upon the whole it is difficult to decide on the propriety or impropriety of the operation. Cases are recorded where the knee has been thrown at right angle, completely, with the thigh and yet a cure was readily accomplished. Operations have been determined on, but prevented by some accident, and during the delay, the patient has recovered.

We must indeed leave it to the good judgment and previous experience of the practitioner. — — — —

Since writing the above, I have read in one of the New York journals a short treatise on wounds of the joints by Doctor Brown, he appears to disapprove almost entirely of blood-letting in the treatment of these injuries.



As I am not convinced, by any arguments he has adduced, of the impropriety of the treatment here recommended, I shall make no alterations or amendments. We do not, more than Dr Browne, wish to see our patients destroyed by the depleting plan of treatment. We approve highly of all the local applications recommended by that gentleman, but cannot think it safe to dispense with the lancet. It is certainly the Hæmulean remedy in all such injuries

